IN THE TITLE:

Please replace the title with the following title: "PROCESS AND ELECTROLYTES FOR DEPOSITION OF METAL LAYERS."

IN THE SPECIFICATION:

After the title, please add the following heading:
BACKGROUND OF THE INVENTION

Please replace the paragraph on page 1 beginning with "Electroless coating with metals . . ." with the following amended paragraph:

Electroless coating with metals is based on an autocatalytic process, so that it is also called ~~also-called~~ autocatalytic coating or plating. In order to reduce metal ions contained in the deposition bath (electrolyte) to elemental metal in such coating processes, an appropriate reducing agent that is itself oxidized during the reaction must be added to the electrolyte. Moreover, other components, for example phosphorus and/or additional metals like copper, etc. are often also incorporated into the coating.

Prior to the paragraph on page 3 beginning with "The invention is based on . . .," please add the following heading:
SUMMARY OF THE INVENTION

Prior to the paragraph beginning on page 3 beginning with "The task is solved . . .," add the following heading:
DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Please replace the paragraph on page 3 beginning with "Through the electrolyte . . ." with the following amended paragraph:

Through the electrolyte in accordance with the invention the disadvantages known in the prior art are remedied by making available a new electrolyte composition, and in this way considerably better deposition conditions are achieved, through which the conduct of the process becomes simpler and more economical. This is chiefly due to the advantageous composition of the electrolyte. In particular, through the use of metal salts whose anions are volatile, preferably metal acetates, as electrolyte base salt, it is possible to increase the service ~~like~~ life of the electrolyte considerably with high deposition rates and uniformly deposited layers with constant layer properties.

Please replace the paragraph that starts on page 3 beginning with "The electrolyte in accordance . . ." with the following amended paragraph:

The electrolyte in accordance with the invention is basically composed with one or more metal base salts, preferably a metal acetate, and a reducing agent, preferably sodium hypophosphite. In addition, various additives such as complexing agents, accelerators and stabilizers, which are advantageously used in acid electrolytes for electroless deposition of nickel, are added to the electrolyte. Since the deposition rate is ~~considerable~~ considerably higher in an acid environment, preferably an acid is added as complexing agents to the electrolyte. The use of carboxylic acids and/or polycarboxylic acids proved to be particularly advantageous, since on the one hand this results in advantageous solubility of the metal salts and targeted control of the free metal ions and, for another it presets the pH value or facilitates its adjustment that is necessary for the process, based on its acid strength. The pH of the electrolyte advantageously lies in the range of 4.0-5.2. In addition, the dissolved metal can be complexly bound with particular advantage through the use of carboxylic acids and/or polycarboxylic acids, their salts and/or derivatives, preferably hydroxy(poly)carboxylic acids, especially preferably 2-hydroxypropanoic acid and/or propanedioic acid. At the same time these compounds serve as activators and as pH buffers and through their advantageous properties make a considerable contribution to the stability of the bath.

Please replace the paragraphs on page 5 that begin with "With regard to . . ." and "12 μm/h with a throughput . . ." with the following single paragraph:

With regard to the present task it is solved by means of a method for electroless deposition of metal layers with internal compressive stresses from an electrolyte containing a metal base salt, a reducing agent, a complexing agent, an accelerator and a stabilizer, where preferably nickel, copper, silver or gold, especially preferably nickel, is used as metal, where that uniform metal layers are deposited at a steady high deposition rate in the range of at least 7 to 12 μm/h with a throughput of at least 14 to 22 MTO (= 70 to 110 g Ni/L) from the electrolyte that contains as metal base salt a metal salt whose anions are volatile and that has a starting concentration from 0.01 to 0.3 mol/L. Preferably at least one salt from the group consisting of the acetates, nitrates, formates, oxalates, propionates, citrates and ascorbates of the metals, especially preferably a metal acetate, is used as the metal salt whose anions are volatile.

Please replace the paragraph that starts on page 5 beginning with "As already stated . . ." with the following amended paragraph:

As already stated, the method suggested with the ~~information~~ invention is characterized in particular by the composition of the electrolyte. In addition, it is environmentally friendly in advantageously economical way, in contrast to the traditional methods. The electrolyte in accordance with the invention can be regenerated by means of electrodialysis processes, for example. When using metal salts whose anions are volatile, the separating effect of the electrodialysis unit becomes significantly higher. In the case of electrolytes that contain orthophosphite ions but not sulfate ions the number of electrolysis cells for separation of orthophosphite ions can be reduced for the same separating power, if the salt load is the same.

Please replace the paragraph on page 6 beginning with "The pH range . . ." with the following amended paragraph:

The pH range of such a base electrolyte ~~electrolytes~~ lies between 4.0 and 5.0. As already described above, metal salts whose anions are volatile are advantageously used as metal recipient. One or more salts from the group consisting of metal acetates, metal formates, metal nitrates, metal oxalates, metal propionates, metal citrates, and metal ascorbates, especially preferably only metal acetate, are used as metal salts. Since during the reaction the pH decreases due to the continuous formation of H+ ions and it must be kept in the set range in a costly way by means of alkali media such as a hydroxide, carbonate or, as is usually preferred, by ammonia, there is particular advantage in the sole use of metal salts whose anions are volatile and that preferably derive from the group consisting of the acetates, formates, nitrates, oxalates, propionates, citrates and ascorbates. This is based on the fact that in the deposition of the metal-phosphorus layers anions of the acetates, formates, nitrates, oxalates, propionates, citrates and ascorbates are formed, which react with the sodium ~~carbions [sic, possibly, cations]~~ cations from the sodium hypophosphite to form basic sodium salts. The electrolyte in accordance with the invention thus operates during the entire deposition process in a pH range from 4.0 to 5.2, preferably 4.3 to 4.8, without having to add large amounts of alkali media. Because of the extremely advantageous pH self-regulation it is possible to avoid continuous monitoring of pH as well as the addition of alkali additives.

Please replace the paragraph on page 6 beginning with "The starting concentration . . ." with the following amended paragraph:

The starting concentration of the metal base salt is 0.04 to ~~0.15~~ 0.16 mol/L, preferably ~~0.48~~ 0.048 to 0.105 mol/L, with respect to nickel, where the content of metal is between 0.068 and 0.102 mol/L, preferably 0.085 mol/L.

Please replace the paragraph on page 8 beginning with "Deposition of adherent metal . . ." with the following amended paragraph:

Deposition of adherent metal layers with internal compressive stresses up to a throughput of at ~~lest~~ least 14 MTO is ensured with such an approach as well as with the pertinent makeup solution when using metal sulfate in addition to the metal base salts described previously. If metal base salts whose anions have at least one carbon atom and are preferably derived from the groups of the acetates, formates, oxalates, propionates, citrates and ascorbates, are used by themselves, the service life of the electrolytes surprisingly rises up to 22 MTO. The already noted internal compressive stresses here are extremely important and very desirable property of the layer. They have a favorable effect on the bending fatigue stress and they increase the ductility. For example, in the case of nickel, metal layers with ductility of > +0.5% are deposited. In the same way the internal compressive stresses have a favorable effect on the corrosion resistance of the metal-phosphorus layers.

Please replace the paragraph on page 10 beginning with "By increasing the pH . . ." with the following amended paragraph:

By increasing the pH range to 4.6 - 5.2 layers with internal compressive stresses from 0 [[0.]] to -15 N/mm^2 are deposited. The establishment of a second pH interval leads to a significant increase of the deposition rate to 12-20 μm/h. The phosphorus content of these layers is 8-10% P. Through a further increase of the pH region to 5.5-6.2 layers with internal compressive stress from -5 to -30 N/mm^2 are deposited. The phosphorus content of these layers is 2-7% P.

Please replace Example 1 on page 10 with the following table:

Example 1:

Composition	Electrolyte	Makeup solution RA	Makeup solution SA
Nickel acetate 4-hydrate (g/L)	12.5-25.5	/	200-212
Sodium hypophosphite (g/L)	30-50	515-565	/
Hydroxycarboxylic acid (g/L)	32-55	/	25-35
Hydroxypolycarboxylic acid (g/L)	0.5-5	/	/
Sodium saccharine (g/L)	2.5-22	12.5-15	/
Potassium iodide (g/L)	0.1-1	1-2	/
Lead acetate (mg/L)	0.3-1	/	60-65
Ammonia, 25 wt% (mL/L)	100-150		